

<110> GUEGLER, Karl et al

<120> ISOLATED HUMAN TRANSPORTER PROTEINS,
 NUCLEIC ACID MOLECULES ENCODING HUMAN TRANSPORTER PROTEINS,
 AND USES THEREOF

<130> CL000861

<140> 09/749,589

<141> 2000-12-28

<160> 4

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 2262

<212> DNA

<213> Human

<400> 1

atgagecage ceaggeceeg etaegtggta gacagageeg % taeteeet £accetette 60 gacgatgagt ttgagaagaa ggaccggaca tacccagtgg/gagagaaact/tcgcaatgcc 120 ttcagatgtt cctcagccaa gatcaaagct gtggtgtttg/ggctgctgcc tgtgctctcc 180 tggctcccca agtacaagat taaagactac atcattcctg acctgotcgg tggactcagc 240 gggggatcca tccaggtccc acaaggcatg gcatttg/tc tgctggccaa ccttcctgca 300 gtcaatggcc tctactcctc cttcttcccc ctcctg/cct acttcttcct ggggggtgtt 360 caccagatgg tgccaggtac ctttgccgtt atcageatcc tggtgggtaa catctgtctg 420 cagctggccc cagagtcgaa attccaggtc ttcaácaatg ccaccaatga gagctatgtg 480 gacacagcag ccatggaggc tgagaggctg cacgtgtcag ctacgctagc ctgcctcacc 540 gccatcatcc agatgggtct gggcttcatg cagttttggct ttgtggccat ctacctctcc 600 gagteettea teeggggett catgaeggee geeggeetge agateetgat tteggtgete 660 aagtacatet teggaetgae cateceetee/tacacaggee cagggteeat egtetttace 720 ttcattgaca tttgcaaaaa cctcccccad accaacatcg cctcgctcat cttcgctctc 780 atcagcggtg ccttcctggt gctggtgaag gagctcaatg ctcgctacat gcacaagatt 840 cgcttcccca tccctacaga gatgattgtg gtggtggtgg caacagctat ctccgggggc 900 tgtaagatgc ccaaaaagta tcacat/gcag atcgtgggag aaatccaacg cgggttcccc 960 accoeggtgt egeetgtggt eteaçágtgg aaggacatga taggeacage etteteeeta 1020 gccatcgtga gctacgtcat caaoctggct atgggccgga ccctggccaa caagcacggc 1080 tacgacgtgg attcgaacca ggagatgatc gctctcggct gcagcaactt ctttggctcc 1140 ttotttaaaa ttoatgtoat trogetgtgog otttotgtoa ottotggotgt ggatggagot 1200 ggaggaaaat cccaggtggc 🖋 agcctgtgt gtgtctctgg tggtgatgat caccatgctg 1260 gtcctgggga tctatctgta/tcctctccct aagtctgtgc taggagccct gatcgctgtc 1320 aateteaaga aeteeetea geaeteaee gaeeeetaet aeetgtggag gaagageaag 1380 ctggactgtt gcatctgggt agtgagcttc ctctcctcct tcttcctcag cctgccctat 1440 ggtgtggcag tgggtgt/cgc cttctccgtc ctggtcgtgg tcttccagac tcagtttcga 1500 aatggctatg cactggccca ggtcatggac actgacattt atgtgaatcc caagacctat 1560 aatagggccc aggaratcca ggggattaaa atcatcacgt actgctcccc tctctacttt 1620 gccaactcag aga#cttcag gcaaaaggtc atcgccaaga ctgtctccct gcaggagctg 1680 cagcaggact tt/gagaatgc gcccccacc gaccccaaca acaaccagac cccggctaac 1740 ggcaccageg t/gtcctatat cacetteage cetgacaget ceteacetge ceagagtgag 1800 ccaccagcet /ccgctgaggc ccccggcgag cccagtgaca tgctggccag cgtcccaccc 1860 ttegteacet/ tecacacect catectggae atgagtggag teagettegt ggaettgatg 1920 ggcatcaaøg ccctggccaa gctgagctcc acctatggga agatcggcgt gaaggtcttc 1980 ttggtgaaca tccatgccca ggtgtacaat gacattagcc atggaggcgt ctttgaggat 2040 gggagtctag aatgcaagca cgtctttccc agcatacatg acgcagtcct ctttgcccag 2100 gcaaatgcta gagacgtgac cccaggacac aacttccaag gggctccagg ggatgctgag 2169 ctctccttgt acgactcaga ggaggacatt cgcagctact gggacttaga gcaggagatg 2/2/20 **Z**262 ttcgggagca tgtttcacgc agagaccctg accgccctgt ga <210> 2 <211> 753 <212> PRT <213> Human <400> 2 Met Ser Gln Pro Arg Pro Arg Tyr Val Val Asp Arg Ala Ala Tyr Ser 10 Leu Thr Leu Phe Asp Asp Glu Phe Glu Lys Lys Asp Arg/Thr Tyr Pro 25 Val Gly Glu Lys Leu Arg Asn Ala Phe Arg Cys Ser Şer Ala Lys Ile Lys Ala Val Val Phe Gly Leu Leu Pro Val Leu Sef Trp Leu Pro Lys 55 Tyr Lys Ile Lys Asp Tyr Ile Ile Pro Asp Leu/Leu Gly 🗐 Leu Ser Gly Gly Ser Ile Gln Val Pro Gln Gly Met 1/2 Phe Ala Leu Leu Ala 90 . 85 Asn Leu Pro Ala Val Asn Gly Leu Tyr Se/r (Ser Phe 1/7he 1/2ro Leu Leu 100 105 110 Thr Tyr Phe Phe Leu Gly Gly Val His/Gln Met Val Prø Gly Thr Phe 120 Ala Val Ile Ser Ile Leu Val Gly Asn Ile Cys Leu/Gln Leu Ala Pro 135 Glu Ser Lys Phe Gln Val Phe Asm Asn Ala Thr Asn Glu Ser Tyr Val 150 155 Asp Thr Ala Ala Met Glu Ala Glu Arg Leu His Val Ser Ala Thr Leu 165 170 Ala Cys Leu Thr Ala Ile Ile Gln Met Gly Leu Gly Phe Met Gln Phe 180 185 Gly Phe Val Ala Ile Tyr/Leu Ser Glu Ser Phe Ile Arg Gly Phe Met 200 Thr Ala Ala Gly Leu Gín Ile Leu Ile Ser Val Leu Lys Tyr Ile Phe 215 Gly Leu Thr Ile Pro Ser Tyr Thr Gly Pro Gly Ser Ile Val Phe Thr 230 235 Phe Ile Asp Ile Øys Lys Asn Leu Pro His Thr Asn Ile Ala Ser Leu 250 Ile Phe Ala Lex Ile Ser Gly Ala Phe Leu Val Leu Val Lys Glu Leu Asn Ala Arg fryr Met His Lys Ile Arg Phe Pro Ile Pro Thr Glu Met 280 Ile Val Val Val Ala Thr Ala Ile Ser Gly Gly Cys Lys Met Pro 295 Lys Lys/Tyr His Met Gln Ile Val Gly Glu Ile Gln Arg Gly Phe Pro 320 310 315 Thr Pro Val Ser Pro Val Val Ser Gln Trp Lys Asp Met Ile Gly Thr 325 330 Ala/Phe Ser Leu Ala Ile Val Ser Tyr Val Ile Asn Leu Ala Met Gly 340 345 And Thr Leu Ala Asn Lys His Gly Tyr Asp Val Asp Ser Asn Gln Glu

```
360
        355
Met Ile Ala Leu Gly Cys Ser Asn Phe Phe Gly Ser Phe Phe Lys Ile
                        375
His Val Ile Cys Cys Ala Leu Ser Val Thr Leu Ala Val Asp Gly Ala
                    390
                                        395
Gly Gly Lys Ser Gln Val Ala Ser Leu Cys Val Ser Leu Val Val Met/
                                    410
                405
Ile Thr Met Leu Val Leu Gly Ile Tyr Leu Tyr Pro Leu Pro Lys Ser
                                425
Val Leu Gly Ala Leu Ile Ala Val Asn Leu Lys Asn Ser Leu L√s Gln
                            440
Leu Thr Asp Pro Tyr Tyr Leu Trp Arg Lys Ser Lys Leu Asp Cys Cys
                        455
                                            460
Ile Trp Val Val Ser Phe Leu Ser Ser Phe Phe Leu Ser Leu Pro Tyr
                    470
                                        475
Gly Val Ala Val Gly Val Ala Phe Ser Val Leu Val Val Val Phe Gln
                                    490
                485
Thr Gln Phe Arg Asn Gly Tyr Ala Leu Ala Gln Val/Met Asp Thr Asp
                                505
Ile Tyr Val Asn Pro Lys Thr Tyr Asn Arg Ala ∉ln Asp Ile Gln Gly
                            520
Ile Lys Ile Ile Thr Tyr Cys Ser Pro Leu Tyr Phe Ala Asn Ser Glu
                        535
                                           540
Ile Phe Arg Gln Lys Val Ile Ala Lys Thr/Val Ser Leu Gl/n Glu Leu
                    550
                                        555
Gln Gln Asp Phe Glu Asn Ala Pro Pro Thr Asp Pro/Asn Asn Asn Gln
                565
                                    570
Thr Pro Ala Asn Gly Thr Ser Val Ser Tyr Ile Thr Phe Ser Pro Asp
Ser Ser Ser Pro Ala Gln Ser Glu Pro Pro Ala Ser Ala Glu Ala Pro
                            600/
                                                 605
Gly Glu Pro Ser Asp Met Leu Ala Ser Val Pro Pro Phe Val Thr Phe
                        615
His Thr Leu Ile Leu Asp Met Ser Gly Val Ser Phe Val Asp Leu Met
                    630
                                        635
Gly Ile Lys Ala Leu Ala Lys Leu Ser Ser Thr Tyr Gly Lys Ile Gly
                645
                                    650
Val Lys Val Phe Leu Val/Asn Ile His Ala Gln Val Tyr Asn Asp Ile
            660
                                665
Ser His Gly Gly Val Phe Glu Asp Gly Ser Leu Glu Cys Lys His Val
                           680
Phe Pro Ser Ile His Asp Ala Val Leu Phe Ala Gln Ala Asn Ala Arg
                        695
                                            700
Asp Val Thr Pro Ony His Asn Phe Gln Gly Ala Pro Gly Asp Ala Glu
                                        715
                    710
Leu Ser Leu Tyz Asp Ser Glu Glu Asp Ile Arg Ser Tyr Trp Asp Leu
                                    730
Glu Gln Glu Met Phe Gly Ser Met Phe His Ala Glu Thr Leu Thr Ala
                                745
Leu
<210> 3
<211> 2/4526
<212> DNA
<213>/ Human
<220>
```

<221> misc_feature

```
<222> (1)...(24526)
<223> n = A, T, C \text{ or } G
<400> 3
ctgggttcct atgtggggag gtcatgctcc ccactcattg agccccccca ggcaaáccác 60
ctggacagec agacecatge agactetgga geaggtggag aggaagagtg agacéagéec 120
gcctcacggg cggtgaaggg ccggcagcct ctgaatagtc tctgctagga ggtagáaagc 180
acceteceat ettaateata gtaateateg ceactaceat ttaetgggtg cetataaaag 240
gccagcetet teatacaeat gateteaetg aateeteata geatetgeet gegaetgtta 300
ttatccccat ttacagatga agaaactgaa tctttgaacc caggtcatct ggctctcaaa 360
cttgtgctgt tttccctaag ccacccggtc tctcatttct cccactgaaa/tgtctcacat 420
gccattgccc ttactcattt ctgcccatgt ctcctccaaa acaccatttá tcaattcgct 480
caacaagtat gtgttgagta cacactaagg gccaggcgag gggctgggca caggcgctgg 540
gggtaggttc attctcccac cttcgcttct gctgggtatc acctgtgggg tcttgccggg 600
cateceaece teacetgtag tteaagtgga cettgggate ceaagáceaa atgaatggaa 660
tgcaccagcc cagcettcac caacttgage acaatettat tearataga aacteacatt 720
tgcatcacac tttacatttt acacaacccc ttcttatcca ttáactcatt tgatcttcac 780
aacaaccetg tgagatatgt ctgttactce cactttagtg afacagaate tgaggtttga 840
aaagtaatgc tgaccattct gcctcattaa taaaagcagg/attaacccag gctcctggac 900
ccttccacaa aaggcattaa gcaacctgct cccctctgac aactcccct gtcacccagg 960
ctctcctctg ggaagttggg ggcatctcta gccccaagt agt actcat tttcaacccc 1020
atctcaaatc ttttgccaaa ctggccacag ccaccccaca/ctqcccacct cccagataca 1080
aatcctcact ctaagccttc cccatctctt tattotctgt ccftctttct ctgtggtcct 1140
ctgagcaact tctcccagct ctgggaggta gaggggaggt gggagaccca gtaattggaa 1200
gagggaggg gaaaggttcc tacagggaac tc/ctccgggc /tcaggggcc ctggcactca 1260
getetgeeca teteagetee tggaacgtea gecaggttge/geaaaaagtg aggaggagag 1320
gagcggcagt acacaagggt gggggaaaga/ttaggcacag gaagccgtgg gagagagagc 1380
cggcaggtgg accatcctgg tttccccaca cacaccattg tccccctggg aaacctgttg 1440
gtgaagttet agatgtetta tecaagaagg gteetettga ggteatetea getateecee 1500
tgcctctagg caagctgttt tctgttt/ctt ccaagctgac tggctgaatg gtaggagcct 1560
ttctgccagg gaaactaagg tctgggaagg gagtatggct tgtggggaca ccaggggtca 1620
ggggagggga gggtccacct gctg/atcaa gtggggcctc ctgccctcgt gattcccctt 1680
tgcctggtgc tcagtggggg tgatggtgac gccacaggtg tggagtgcca gccacgtgct 1740
gagegecaag caaaacagec agggtgagte tatgeateat cagtgeetgg gaaggaagge 1800
cactgcgagc agggagtctg acggaaaaac ttgacagagg gaagggaggc accttgcttt 1860
atcggggcgg ggaaggccag/aataaaactc tgctactgca aggaccagag agagaaggcc 1920
tgggctggca ctagggaggg atgttccctc accctcccct cctctgcttc tcccaaagct 1980
tgtaaatgcc ccagatatga gccagcccag gccccgctac gtggtagaca gagccgcata 2040
ctcccttacc ctcttcg/cg atgagtttga gaagaaggac cggacatacc cagtgggaga 2100
gaaacttcgc aatgcottca ggtaactggt ccagagccca gacttctgcc tcctctgctc 2160
cctaccaaaa tcctt/tctgc accaggacac ggcttctgca ctggtatccc taagatgggg 2220
ttaagggaag ccct/ggggaa gtgaggttct gaatgatgaa tttaagatcc tacaacctca 2280
tetgtaetga ga¢eeccagg gaggatgggg ageaggagea agaaecatee agaagggtta 2340
tatggcattc cdaaacccct gcatggcatc tcccatattc tcaattcacc cgggtctctc 2400
tgggtttgtt 🗚 aggcatggt agatgagcat ctacgttatg gaggggtggg gagcatcaga 2460
gcccttactc/catgccctgt tccctcctta caaaaaatac ctgaagttac catcacccca 2520
ggttctttg# cctttccctc ccggatgttc cttcctccac ttggtccaga gaatgccaaa 2580
aggaggcc/t aaatttctga actttcctga ggggacctac cagggtgtag tcctaccagc 2640
gcccagggtc tttccactct catctccctg gaaatgcgat ggtgggtatg aaaccttgtc 2700
cctaag£agg cgctacacaa ggtgatccat acccacaccc caggaggctg gggctgcggg 2760
tgtca/cete eccattecea gaeteetgge agaeeteete tggeecaget ataggeeaae 2820
tcac/tctccc tcactccctt ggggaaacgg ctgattcagt tacctggatt gaggtcactg 2880
gca/atggctg aagtggagac gcaggtggaa ctggttcagg ccggggggaat cacccacttg 2940
agtttgtact aaaagcccca gcccagccct gtttctcttg ggaggctcca tttctgccca 3000
gtacagtet gteeteacag etgtgeteet cagacaggtg gtetetgeea gtetttgtgc 3060
caagacttt agggcacaaa gtctgaggat gagaagatct gctattgtcc taaaagatta 3120
```

ggataatgaa agctgtaaag ggatatagca aactaacaat tcctatgata ctggcatgag 3180 agcettgaac agtgeetgge atagagaagg tgeaccaata aatatttgtt teatgaatga 3240 atgaatgaat gaatgtotag aaagotaato oototoagoo totgtttoca gttottottt 3300 caagetteag attgetttge ceaacataca geagaettge aagtaaggtt gggeatggae 3/360 tagccctcaa atgagttgtt tttctttccc tagccagctc tctattcata agtccggctt/3420 tctctgccac aaacagacct gatggagccc ctgcagggct ggttctctct tcaagcaag 3480 ctttagagtt gcattaagca atttatcccc cgtccacctc cccttccagc atcccaggga 3540 tggcagaggc acccatgagc cccagaaggg acagggggta agatattgat gatgatgctt 3600 tttcttggag tgttagttgg aagagaaaat ctgcccagac tttccaaggt acaaagcatt 3660 gtctttgttg gtttcagtct tgggtgacat ccaggggacc gagtgtcagg gaaáctattg 3720 ttgagcaaga gcaaagagca ggaattggtg ctgggcagga aaggaagcct catcagagca 3780 ggccagtgag tcaccaaatg ggccctaagt atttgagttc cctcaactgg gagaaggaaa 3840 gcaaatgccc ctcacccact tccagtcatc aatccaccgg ctgtcaccct tgagtttgta 3900 agcccttgtt cctaccgctc ctgagtttct atgaaaggac cttgaggtgt tcaacaaaca 3960 gggaagggat caacteteee caccetgegt tgaccaatga attetteet cetetgetge 4020 ccagtgaatt aacaggagaa agaactccgg tattggagtt accacacacacata aaggatagtg 4080 agtcagcaga gtgcaccctg caggaacaat agagccttcc tttteaga agttctaaga 4140 aaaatggcag caggcaggcc ccactcgggt gtattcactc att/catttat tcaacaaata 4200 tttactaagt gcccctgtgc aaggctcgag gtgtacaaag at gaacagga gagctagact 4260 tcttgccatg cgtggtgggg tttgctgcct agtgggagag acagacaaaa agcaaggaat 4320 gcacacacag gatgcacaca cagcggcagg aaccaaggtg/cagttaccca ggcctgggat 4380 cagacagaca ggactcagag gagactttcc cagagaaaag ccatctgagc caagggatgg 4440 atctgatacc tccgaaggct gagccaccat aacaetcata cetttaagcc aagtcttata 4500 aactccccag gtaagcagct ggcagtcaga agacctcqag ctaatgccca ggacaagttg 4560 atgagetete aagaaaaagt teetgeettt /cette/caat at/ceetggea cacagtteag 4620 tgaattttga atgaaccaat gaatgaaatg agcaggatat gataatccct ctccaacacg 4680 gaatgtccaa gccatgcaga gccgactgga aartttfccc gttcccttcc agatgttcct 4740 cagccaagat caaagctgtg gtgtttgggc tgctgcctgt/ gctctcctgg ctccccaagt 4800 acaagattaa agactacatc attectgace tgeteggteg acteageggg ggatecatee 4860 aggteceaca aggtgaaggg geteetteag ecaggeetgg attgecacte cecteaceat 4920 tectetecte atececaete cateceterg tgatececat aagetagtea tgetgetgag 4980 cttcagtctc gttgtcctct gcaggcat/gg cat/ttgctct gctggccaac cttcctgcag 5040 teaatggeet etacteetee ttette/eec teetgaceta ettetteetg gggggtgtte 5100 accagatggt gccaggtaag gcctqtcccc tctgggcagg caggatgacc cagaccacaa 5160 ggatgggagg tgtggcaaag ggggctcggg agattttcca tctgcattct cctggagttg 5220 ttcctggtca gtcctagggg aarggtcact gtgaatgtca tttccaggtc ctcggtgacc 5280 ttggagaaac cactgagcct cxttgagttc agttagcatt acctgttcca tcttcctcct 5340 aggaatgaga ggaagactta gcagaacaag atataccata tgctataaca tgcttaaaca 5400 gatgtgagaa atcaccatct/aactccctgg ttggtcccag ccggccacta cagggacatt 5460 tggacttctc tggtgctaag tgagatggag gaaagcctgg tcacaagggc tggtttctgg 5520 ttcaggetet gettatat/tt ettatttetg agtteatttt etcaegtgte etgtatgaca 5580 atattgacca ttggggg/aaa agcaccttga aaagcataga tcatggttag agtgagtggt 5640 tgttattatt gtgttggaga agagcettgg aggtgcaggg atccatecee etggggtegg 5700 gaagcattcc tggg/ccctt tctggtttcc atcggtgtgg ttcaaacctc tgatttttgc 5760 tggctgggtg ggg/caccaca ggtacctttg ccgttatcag catcctggtg ggtaacatct 5820 gtctgcagct gg&cccagag tcgaaattcc aggtcttcaa caatgccacc aatgagagct 5880 atgtggacac ascagccatg gaggctgaga ggctgcacgt gtcagctacg ctagcctgcc 5940 tcactgccat catcaggtg agggggcagc ccccaaccct gctagaaggg catcagacca 6000 ccctgcccct/ccctcaaagc cttagctttg atgctaaatc tgatttaggg ggctgggtgt 6060 ggaggctca/t gcctgtaatc ccagcacttt gggaggctga ggagggtgga tcacttgagg 6120 tcaggagy/tt gagaccacct tgaccaacgt gatgaaaccc catctctacc aaaaatacaa 6180 aaataat/cca ggcttggtag tatgcgcctg tagtcccacc tactcaggag gctgaggcag 6240 gagaat/cact tgaatccggg aggcagaggt tgcagtgagc tgagatcgcg ccactgcact 6300 ccagoctggg tgacagagcg agactccgtc tcaaaaaaaa aaaaaaaaa aaaaaaaaa 6360 ccca/dgttag ggctcacctc ctccctcctc cccatcccag ggctaaagtg aaccttgaaa 6420 attacagta tetecteate tgeatgtage aggaceatae aaaaaaacaa cagetgtace 6480 tggttaaact gtcctgagct ttaaacctgt aaaagactca cagcctctct ccattatccc 6540

gtggagaaac ccaactctct gccagcatag tcttgcagac tgctaatttt ctctaacatc 6600 ceteacteeg etecageete etetgeteea ageeacagea geagttgeae aacataaatt 666% gagettetge aaatggttge aaaggattet getaggtttt atgaagggaa geacaacatg 6720 acagaatgca agagcaaaac acagtcccag agagcgcctt ttcattcact cattcattcg 6780 gttttgtgcc aagaactagg ctaaaccctg ggatacaaag ataagtaaga aagaggtcca 6840 attcacaagt tgctcacagc ccagcagagg aaggagccat gtcaacagat aaatttgtát 6900 tcacggagga cctcaaagag gaggtgacac tccacctctc ttaaaggatg agaacttaac 7020 caggaacaag gtatacagag gatggtccag gcagaaggga acagtgccta aaaaćactga 7080 ggcctgagag agtgtgatct gcgcaggcaa agtaaggggc ttggtgtggc tggágggtag 7140 agggcccaga agaggatgga aaagtaggca ggagccagac aatgagatct ggggtctgtt 7200 ctctgacagc gactttgggt ctgattggca gtttataagg atcgtttggg &tacacaatg 7260 atgagtggga ggtggattag aatcaaggca ggggacctgt tgggagactc/tgcagaggcc 7320 caggcaggaa taatgcaggc gaagaccagg tagagaaaga gatggggct/g gacttgaaaa 7380 gaatgtttta ccaggagctt ggtgatagac tggatgtggg aggtaaggga ggatgactct 7440 caagtttttg gttgggcaac caggttaatg atggtgtcat ttactgágag agaaaacact 7500 gggggaggac tagacttatt ttacagataa gccaaagcca gagaggtgat gtgacagaaa 7560 ggcccatgct ctaaaggagc tgaaggtctg atggcagcca tgtagagcac agtgaagggc 7620 aggtgaaggt cacagatggt ccaattccct caagctactg ctácgctagg actgcacgga 7680 gctccagacc tgcgtgtgtg tggggcgggt cgttggaact gctgaaccac attggtcttc 7740 cgccaccaac caccettte etectetcag atgggtetgg getteatgea gtttggettt 7800 gtggecatet aceteteega gteetteate eggggettea tgaeggeege eggeetgeag 7860 atcctgattt cggtgctcaa gtacatcttc ggactgacca tccctcta cacaggccca 7920 gggtccatcg tctttgtgag tctggggatg cacccctgcc attggagcaa ggctccagca 7980 gacacatgag gaggatgtac tgttttaaga tgtcgtgagc tcctcattgc aagggctggc 8040 ttagctgttg ttcagagagg attctgaggg ggtt tctgtc ttgggagggt caaagtcatg 8100 actcacagag gttcttggta gttaatacct gcagaaaaga gctgtacatt ctccgccagt 8160 tccccattct agtgcctcaa cccctccctg cotggaaagt cctgccttat gtctaatctc 8220 cateceteet cetteageee aaactettet aagaaaaaaa aagaattee ttttetagea 8280 caagttcccc atgtgccttt tgggaaaggg/cggtgggcga cgggacaggg ttcctgatca 8340 gggttttaat totgtottgg tgtgcctcc ttagctttga tggcatccct tccctgggtc 8400 agacacccaa aggtggggta ttatgggaag aaggggtggg agcctgtgag catgatgctc 8460 tttcccccag accttcattg acatttgcaa aaacctcccc cacaccaaca tcgcctcgct 8520 catcttcgct ctcatcagcg gtgcct/tcct ggtgctggtg aaggagctca atgctcgcta 8580 catgcacaag attcgcttcc ccatqcctac agagatgatt gtggtaagga ccttgttcag 8640 agctgggatg ttggggggcc agg¢tgtgag acgaggaagc ccctaccttt cctcacccca 8700 tcccctcaac tggcagccag tgggacagga agtcagttgt gaatccatcc catcccccgt 8760 atgtggcgtt tcctctcttt cractgctct aataattccc cctaaggagg caggggagtg 8820 ggattcaggg tccccagaga Aaagggagac ttgagagaga cgcctgccct ggccccacct 8880 tagggccaat ccccattctc/cactctgggg tttgcaggtg gtggtggcaa cagctatctc 8940 cgggggctgt aagatgcccá aaaagtatca catgcagatc gtgggagaaa tccaacgcgg 9000 gtgagtccag gtggcccaga agcctggccc acccgcacct catgccccac taaggcctga 9060 gctcggagag ggagaca/aga tgaactctat gaaagtgcag tcgaaactgt atgacactga 9120 ccatgtatga attatt/acta ttaccgtttc ctgagaaggg ccgcacaacc agccaatgta 9180 ggctatttta tgagaaatga gtcttaactg ccacactccc cttataaatc tcattcaact 9240 gatgctgtta aacaaagcct ctctgaacag ccgcttgctg gctctttgcc ttgctctaat 9300 gcattggttc tt#gtccatg tagaaaggga actattaggt tcaaccagat tcatgaagca 9360 tccactctgt g¢caggcacc atgctgggcc ctgggaggag aggggtgacg cttgtcctgc 9420 agggttggaa 🗸 aggcaaggg agggaagacc acatagcacc aaaggtctag gggtctgtgg 9480 actcgtgagc/atacagggtt cagaatctgg gagttaacaa acgaggccct accacatact 9540 ggcccgggg ccttgggcaa gttaggttct ctcagcctca gtttcctcct ttgtaaaaca 9600 ggagtgat/g tecetaceet atggggtggt getgaggatt cagaetggat gggataaett 9660 aggcaaagat cccggcacac catgggggcc tggctggtcc ctgtgggctg gtgaaggact 9720 tggctgcct ccccactcac accettgggt tetgcetect teetggetee teggeaggtt 9780 ccccacccg gtgtcgcctg tggtctcaca gtggaaggac atgataggca cagccttctc 9840 cctagccatc gtgagctacg tcatcaacct ggctatgggc cggaccctgg ccaacaagca 9900 cggétacgac gtggattcga accaggtagc tctggccacc cccggcagga ctgggcagga 9960

caggtcaact caggcctggc atgacatatc ttgggtgggg agatcattgg gctgaggtga 10020/ ggcaggctgc ctcgagtgtg ggggataggg ggtcctctga ccctaagagg ctgacctcct 10090 cttgactggg aatgtgtgac tttatagcca ctgggtcact ctcaggtctt aggcccacag/19/140 tccagcttgc atgcctgact gcacttggtc cccgtgcccc ccagccccac actggcttct 10200 aatcctgtcc cctccctgca ggagatgatc gctctcggct gcagcaactt ctttggctcc 10260 ttctttaaaa ttcatgtcat ttgctgtgcg ctttctgtca ctctggctgt ggatggagct 10320 ggaggaaaat cccaggtgag ccttgttcta ggggagttgg ggggaggtgg taagagaaca 10380 gttgccccaa aaaagcctgg gcactgcaag ccaggccagc tcttctccga cccottcttc 10440 ccgtacttag tctccactcc accaaagcca tggattggaa ataaatcaag agcaaaaatt 10500 tcacaccttc cctctatccc caactctttc tcggaatagg tggccagcct gtgtgtgtct 10560 ctggtggtga tgatcaccat gctggtcctg gggatctatc tgtatcctct/ccctaaggta 10620 agageceage categageag aagteaaega aagaeteeaa taagaaeaa⁄t eeetgagagt 10680 tgtgtggcac tttacggacc acaaagtgcc actgttgtca tacttagfct caaccacaaa 10740 ctgtgaggta gacaatgcag gttttatcct ccccatttta caggtgaagg aaactgagtc 10800 tgagagteta agtaacettg tecatagtga ggeagettae agegeagge tggteecaaa 10860 ctccagcctt ctggcctcag agtctaatcc ctaggcaaca tttgcaccta cccacgagta 10920 ccaggetett atatageeca getaggaggg etetaggeat gegtettta gagatgaggg 10980 aagagagata gggaaaggat ggggeeagga aggaeeceat ggetetaaeg ecageaettt 11040 ecaaaeetaa ggtegaatge agagatttgg gggateage agggaggtg ttecagaaet 11100 ccgtctctgt cctgccaggc cttggggtcg ggtatgcca ggagggcaaa aagaagggga 11160 gaccetgggg teetggagea atgttetget tetetagtet g#getaggag ceetgatege 11220 tgtcaatctc aagaactccc tcaagcaact caccgacccc tactactgt ggaggaagag 11280 caagetggae tgtgtaagta tegggeagee tetgggtaet ggceatgeee etgeeetete 11340 ctccaaccc acagecetgt cagecetgte craacaatga accetetagt etgetgette 11400 ctaattagea tgagatgagt ggttaaaagt ecgagetteg aagtgaaaca tectatgtte 11460 aaaccetaac teagecatet getggeteea tggecaatag caageceett aacettteee 11520 agtettggtg tettaactgg geaaatggt/t attttatget etetgeetee eagggtttte 11580 tatgaagaag aagcaaggta atacaagtaa acatgttgtc tacatcgtat tttatactca 11640 ataaagetta getatgacta etttat/gaca tacagettta aaaaacaaaa ggaaatagtt 11700 tgtattttaa aaaaaaacct agaagataaa gccagaggac caaaatcttg agcaagttac 11760 tagacttccc tggggttcta ttt ctcatc tgtaaatggg ggtgagactc atgcagtcat 11820 ggttgcgtca aacgctggtt ccgaggatta aatgagatcc cagtgggaaa acaccgcatg 11880 agegeaaaca ttetgeaaac afgaettatt gteetgatta gteacacact ceacegeate 11940 atcogctggg catagtaatg/aaggccagtg tgttttgacg acactgcctt ctctccattt 12000 aagccccacc ataacctatg ggagaggatt tactaaactt tcttaacggt gatgaaacca 12060 aggeteagaa tggttaagta aattgteaaa ggeeacagag gtagggagtg gtagagtetg 12120 gattaaaact ccaagtoctg gactccagac ctctaggctg tactgtctca tagggaaggc 12180 agteteacee acetagggea gagaagaaaa teettaaage cagagaagtg agtggeteat 12240 ctgtggtcac ccagagagac agtgatgagg acagggagaa aaattatacc tcagttccca 12300 gcccaaggat ctg/tttgac cataacccaa caagcccccg ctatggtggt atttccttag 12360 gttcatatgg cggcttttgt ttccatttga tcttcacagc aattctctac aggaatctgg 12420 gcagatttat t£cctttaga ggaatttcca ggtcttaaaa tctatagggg gcaactatca 12480 aaacttcacc catgttgcc ccctacccac acacaaaacc aggcccccag ccgatcagaa 12540 agcactgctg/agctcctgtc agggcccacg cagctcgctg tgagacagag agagggaact 12600 cacatttat/t gatcacctac tgagcatcca tcactaggct aggaccgtca cattccttaa 12660 cttttgaa/tc ctttcatgag gtaggcatta ttattctcct tttgtttcac atagccatta 12720 aagaacaaa tttggggctg ggtgtgctga ctcacacctg tgatctagca ctttaggggg 12780 ctgaggcagg aggatcgctt gaagtcagga tttcaaggtc agcttgggca gcttagcgag 12840 agccgftctct agaaaaatat aaaagttagc tgggtgtggt ggcacgtgcc tatagtccta 12900 actáttcagg aaggttaggc gggagcacaa cttgggttcc agggtttgag gctccagtga 12960 gc#gatcttg ccactgcact acagcctgag caacagagca agaccctgtg actccaaaaa 13020 cáaacaaaca aacacatttt gaacccaaac agatctgacc caagatgcat gctcttatag 13080 stgccacctc cctgtgtgct ggggcttcta ctaaaaacac agacaagatc aggcaaccac 13140 agtcaatcta agggaaagag gaaagtgtaa ccaaagcaca aatacataaa atattgcaaa 13200 aatgctattt aaagaaaaaa aagagaagag aggctctgag gttgtactaa cagagaatgg 13260 ccttggctaa tccaggaaga cttcctgaaa gaggttgttt tttccccagg tctgcttttg 13320 acatetetet titeaeagtg catetgggta gtgagettee teteeteett etteeteage 13380

ctgccctatg gtgtggcagt gggtgtcgcc ttctccgtcc tggtcgtggt cttccagact 13440 cagttgtaag tgatagette egeceteeta ggeecacagt eggtteeetg ggeeageeeg 13500 caaagggett ccatgccacg gcctggetta gtccactgta ccttccacct ctgggcctgg 13560 cactggaggt gctgccaggc ccaaagagag cccaacccag ccaggactgt gggcacagtc 1362% tgggctgttt gacttcccat atcttgaaaa ccccagagaa agccagcata ctcttgctgg 13680 ggatggctgg ggagagggca gtggcagaga aaggagggca agggcaggtg gtgagattca 1/3740 acatecttee aaagacattg ceagaaceee aaaceaaatg ggaceeeace ceaggagage/13800 qccaqqqtqq aaqacaqaaq ctqtqttcta cacactggga gtattacaga gaaggggtet 13860 tggccaaggc agggagtacg ctgaatgttg ggggaatcct atcttctctt cttgagaáct 13920 cagaacaagg aaatgatgac ttcagggcga ctcccaccac ttctcccacc acttc/ctcc 13980 cctqccctqt qqtctqqqaq ctatqtcaaq gacctqcctq tcatcctcat aqtratagqa 14040 ggccacaggc caccagacat gtgtctccag tgcaaaaaga cagacacagc aa/stctgggg 14100 gtgaggacag gaccccatcc taccttggct ctgcccccgc cccagcaggg gcacccttcc 14160 aggeceatgt gecattagea ttetettatg tttttetett cetgetteat/ceagtegaaa 14220 tggctatgca ctggcccagg tcatggacac tgacatttat gtgaatccca agacctataa 14280 tagggtaggt aattcaagct tatgacctcc ttcttttgct ctgcacgacc ccaagaagag 14340 gttgcttttt aaagccaata aagacatttc tgcaacttga gctcagtctc cctgtcacag 14400 gcccaggata tccaggggat taaaatcatc acgtactgct cccgtctcta ctttgccaac 14460 tcagagatct tcaggcaaaa ggtcatcgcc aaggtaaggc tcagtccctg gcgaccagag 14520 gctctggaca gagagtggcc ggaaaatgga agcagaaggg /ggtgggagc tgagaatagg 14580 ccactcccat agagggtgga ggtcaagatt gctgttggct etctccctgc agacaggcat 14640 ggacccccag aaagtattac tagccaagca aaaataccte aagaagcagg agaagcggag 14700 aatgaggccc acacaacaga ggaggtctct attcatgaaa accaaggtga atgaaggcca 14760 gaagcagccc cgtgccctgc tctcctgccc attctgatac tgccccctgt tactcatggt 14820 accetggggg cocceettce caccetgaca ggcaaagaca gaaagt/ctct/ gggaacactg 14880 cctggtggcc gctgggcatt tttcttcttt ttt/tctttt tctttttaga gatggaattt 14940 tgctcttgtc acccaggctt gagtgcaatg gogttatctt ggctcoctgc aacctccacc 15000 tctggggttc aagcgattct cctgccttag cctcccaagt cgctgagatt acaggtgcca 15060 ccacacccag ctaatttttg tattttagt agatattggg trtcaccatg ttggccaggc 15120 tggtgtcaaa ctcctgacct caggtgatcc acctacctta gccttccaaa gtgctgggat 15180 tacaagcctg agccactgcg cccagcctgg gcatttttct tcttggatga ggtgctacca 15240 teteccaggg aagecaetga acceeéagg ceetteteea ttttetgget aagataggae 15300 atggcccatg gacttttgaa caac@cagag ggggaacagc agtgaatttc ctggggaacc 15360 caggcagccc agggctagca aggctggggt ggccatggca gtaatccttg taatcccagc 15420 actttaggag gccgagatgg gagaatcact ctcatgagtt caggagttcg agaccagcct 15480 gcccaacgtg gcgaaacgct gtctctacta aaaatacaca aaaattagcc aggcgtggtg 15540 gtgggcacct gtaatcccag/ctactcagga ggctgaggca cgagaatcac ttgaacccgg 15600 gaggcagagg ttgcagtgag ccgagatagt gccactgcac tccagcctag gcaacagagg 15660 gagactetgt etcaagagat aaaggagete agtgteeeg gaggggettt etceeagaga 15720 gagtgggett gagget#cag tgcctctctt ggctgggtcc tctgactttg tctgggttgt 15780 aggagaccaa gtttgćaggc cctgcctaag aaagggcttt gggagaggcc tctctggtgg 15840 agettteagg gtet/gtgtte accateaceg aggegagtta tteecetaca cetacacect 15900 ccatgcccct gct/tcagtca cagcaaggtc tggctcagtc tggtggtccc tgactctgcc 15960 cactgtcccc agcettccag actgtctccc tgcaggaget gcagcaggac tttgagaatg 16020 cgcccccac &gaccccaac aacaaccaga ccccggctaa cggcaccagc gtgtcctata 16080 tcaccttcag/ccctgacagc tcctcacctg cccagagtga gccaccagcc tccgctgagg 16140 cccccggcgá gcccagtgac atgctggcca gcgtcccacc cttcgtcacc ttccacaccc 16200 tcatcctgga catgagtgga gtcagcttcg tggacttgat gggcatcaag gccctggcca 16260 aggtgaggcc ctcggggaca gcaagcacca cccactccac cccctccgct ctgctctcca 16320 cattc¢cttt cctgggagcc ctcatttcag gaagctgagg gaggaagctc actggggaga 16380 ctaafagete etaggaatee eteettteee eagaegeeae eaggttgaga eatteteeae 16440 agagcaggcc cagacggccc atgacaatga gtggcgggac aagtctacca gagtttcagg 16500 cc¢ctgtgct cccaacaccc ccagcagtgg ccatcccaag tccctctcag ccatcaggaa 16560 $c\phi$ cacccagg ttctctgagg agggtccagt ttggctcctg gttcatgatc tgctgccctt 16620 ftccctcatt caccagccac cctaggacag gagaagaaat aataccagtg ccccacacca 16680 tcaggccaaa cagagagccc acgggacacc ttgaatgaat gtatccatct gataactttc 16740 cagcagecae egecaatgge gggagteage aaaceteaga getggeteag atagaggeaa 16800 gccaggggaa caatgggcac agagagtgtt cggactgcct tcaccatcaa ccaggcgcag 16860 ggcaggcccc atacccagcc ttgggcctca gccggcttcc ttagccagga tctggagtcc 1692\$/ aggecageet tggetgaage tetagaetee etgageetee atecteeeet geagettetg 16980 tctgaagcca caaagaagtc tgagaatcta agctactgaa agaaaagatc agccgggcgt 1/040 ggtggctcac tcctgtaatc ccagcacttt gggaggccaa ggcaggtgga tcacaaggtc/17100 aggagttcaa gaccageetg gecaacatgg tgaaaceeeg eetetaetaa aaatacaaa 17160 attagccagg tgtggtgacg ggcccctgta gtcccagcta ctcggtaggc tgaggcagag 17220 aattgcttga acccaggagg cggaggttgc agtgagccaa gatcgcgcca ctgcaøtcca 17280 gcctgggcaa cagagtgaaa ctccatctca aaagaaaaaa aaagaaaata tctagcccca 17340 caagaagggg ccatggtgac tttaagtgcc cgccacgttg gcaaaagtcc atttccgctc 17400 cacttcccag agaaaccgtc agccaacact ccagggagaa gtggtgtgct txgctgctat 17460 ttttgtcttt ggctgctggg ctctcagggt tgcttatttg tttggcttcc/cctctgaagt 17520 acgttttgtg aatcactttt gagacccact cagaacattc ctttcctttt gcctccctac 17580 cccaacaaca cttctagctg agctccacct atgggaagat cggcgtgaag gtcttcttgg 17640 tgaacatcca tggtaagaga aagaggacat ttagggactg aaagackggc aaggagtgtg 17700 gggtaggaac aggttggtgg ggtctgaata gtgaggaggt tggaaacgag agcacccagc 17760 tatcccccac aagctgctgc ctgctcataa aagcttcagg tacaagtcca aagagactgg 17820 tcagattgca taaacatcct aggggcctta gtgacagagt gggggtgagg aggtcatgga 17880 gttacagaag gacagctagg attctaatct accccataac kaatttgcca cgtatccttg 17940 gccgagtcac tttatctctc aagggatcta tttctaccta/tgtaaaacga gagggttgac 18000 tagatggatt tggggatcct ctcccaatca gaaactctgt gaatcgatat aggcatagag 18060 cacacggtac cctaattccc cagggaacat ataaatatgc agttttgtag gcatacagcc 18120 tccaaagggt gcatatacac agcctcaagg acgtggccac agggcagcag acatttacat 18180 gactagcatg tacgcaaagt gcagagatgt gggagcaagt gcacagagac acacaggaga 18240 atgtgaaggg gcacatacac acacacccag ctc/ctg/cac tgggt/cagac cccctccagc 18300 agggctgcag ttcccaagct ccgcatggcc achttcgggg agagaatctg cagtggcaat 18360 gacctgctat gatatgttct ggagttagaa gcagtggatt cycccaacc tcactggaca 18420 cccccttagg aaaccatctc taggattaag/agtaatccac/acaaacttcc aatgccacac 18480 attggaagtt gctggaaagg tctgggaaaaá caagaggaaag gatgggtcct tggggggatag 18540 aactggcagc ggcctcttca aggatgggtt aggcttttcc actcgaatca ccacaaagta 18600 ctgactccct aaatcaaact gcttcc/tct gctctgggtt gaaacttcag catcctcaag 18660 ttcatgttgc cctctgccgt ccagaáctga tattgcactg ccaatgccat ggccctcaga 18720 tacagcaaga gctgggacct caggcetete ceatecetge tetggtetea etatetteee 18780 cacccccage tecaatecae aargetett atetteteta aggtgatett tteteettet 18840 agcccaggtg tacaatgaca txagccatgg aggcgtcttt gaggatggga gtctagaatg 18900 caagcacgtc tttcccagca /tacatgacgc agtcctcttt gcccaggcaa atgctagaga 18960 cgtgacccca ggacacaact/ tccaaggggt aaggttcttg cacctgggga atcctaggct 19020 ccaaggcact gaaatagcag gaccaagagg cattattaga aagaacacag gagaaggttt 19080 aagttccaat atcaagt/ctg ccatttcagt tttctgaatc tgtttcctta tctatagaat 19140 gagcaccatc aactaacatt acctacctct ctgcattttt cttttatttt gttttagggt 19200 taaatgataa ttaca/tottt tgtgtcactt gaaagcactt tgtgtattgt aaaaattott 19260 tatcaatata agtt/ttctgg ttgcacaaac acccaaagca tagtagagca ggcccactct 19320 gctggcatcg ttdcctgcct cctcctcatc tctttctaaa gggggctttc gggaagggag 19380 gggaggggag taagcctacc cattttaact taccggagct tagagatttc aggctggtga 19440 gggataaaga gattgggtct gagttttgtc tcagcttttt gacatttaat ttactagctc 19500 agtaagtcat/acaaatggga tacaaataac accatctaaa actccagaag actggggagt 19560 cagaaaaatto ctacctcctt ggggtccctg cccagatccc cagtcatctc tagccctcag 19620 ggtcccct/cc cagetcaget cetgecettg geeteecaag actettgttg tgeeceagee 19680 ctgggtaaaa acctcccctg ccctctgtgg gtcataagaa aggcttttct ggccctagag 19740 caatgatttg ctctttgcct taagagactg atgaaggtga aaccatctgt tctaagtgct 19800 gaaagactgc ccaggaacac acagggcgct ggctcctgcc ctccatgcct agagggaaac 19860 cctggggaaa caacgggctt tcctgcttcg tgaaatttgt ccgcagagca aagagggaga 19920 tt¢tggagga agctgcatta gttgttagtg ccctaatcat gttcagctac tctagttggt 19980 ácatattata gaccattcac agatacaaat cacacacata aacacacac ttttcaacag 20100 cattgtgagg gacaaagcag gcaaagtgag gctggttatc agactttaac agattagaaa 20160 atatattccc aggaggacag gaattcccca aggtcaggca gctagccaat agtttttcta 20220

agctgagtaa aaccttccct gcctctaacg gcccacaaag gagggaagac cgcgatacac 20280 acctgtctgg tataaggggg aagaccacag ccgtgctgtt tttgtgaggc aggtaaggga 20340 aggggcaaga ggataagtca tgtgtcagga agcagcgtcc aaccagagcc ggccacctgt 20400 cccttttcct gccaccatgc accaactttg ctgttcagtc actgaagctc attctgcact 20460, ggcttcctcc cttccaggct ccaggggatg ctgagctctc cttgtacgac tcagaggagg 20520 acattcgcag ctactgggac ttagagcagg tgagctgagg gaaggggctg tgagggtggg 20580 agcagggcga agaggggaag gatggggtcg ctgtcaaata caaggcgttc actcagctgt 20640 ctcacctcca gcccagagca gtcacattca aggccacaaa gatttgtggt catctttgtt/20700 ttttttcttt tccttttctt tttttttt ttttaatttg agacaaagtc tcactctat/c 20760 acccagactg gaatgcagtg gcatgatete ageteactge aacetetgee teeegggtte 20820 cagaggttct cctgcctcag cctcccgagt agctgggact tcaggcctgc gcccagctaa 20880 tttttgtatt tttagtagag acagetttte accatgttgg etgggetggt etegaactte 20940 cgatctcaag caatctgcct gcctcggtct cctaagtgcc tggattacag gca/faagcca 21000 cgatgcctgg cctttgtttt cattcttctc actccctgaa aggcatcgtg gggagagggt 21060 gagtcactgg accaagtcct agagaaccag tatctattct tattctccaa ¿acatcaccc 21120 acgtgaccct gagcaagcca catacaccct gggccctagt ttttatcatg/tgtgaaatta 21180 ggggaaacat aggtaatacc tgtcccatcc accacacaag attggcaggg cagtcacttg 21240 ttotttoatt aattoagoag gtatttatgg ogtacotact gtttgockfga cacagttoag 21300 gatgggcaca tagcagtgag caaaacaaag gcctctgcct tttagaact tacgttatgg 21360 nnnnnngtct acaaatgaat tattattgca tgtggacaag ccttaagaac taaaaaatat 21480 gtggctgggt gcaatggttc acacctgtaa tcccagcact tt/gggaggct gaggtgggcg 21540 gaccacctga ggtcaggagt ttgagaccag cctggccaac atggcgaaac cccgtctcta 21600 ctaaaagcac aaaaattagc caggcgtagt ggtgcatgcc/tgtagtccca gctactcgga 21660 agtctgaggc atgagaatca cttgaacctg ggaggcagak gttgcagtga gccgagatcg 21720 tgccactgca ctccagcttg ggtgacagag ctagactgtc tcaaaaaacaa acaaacaaaa 21780 caaaacctaa aagatatgtg gatatgaggg atcaccatco coatagggcc cctggattaa 21840 caccacccca ccaatgcct gaattaaaag aaaccagatg actaggtttg gagaaatctg 21900 getttgggte tatgagaagt agtgtetete tttgegeete tteecattet ttttgacatt 21960 gagetecatg gtgetetgaa teegtetete acagtgetga tggeaggtgg gacagattag 22020 aaaatagago tggagocaca gagatttggo agactgattt gggtgocoto ttggaatoto 22080 cagcacatto caaaaagoot ggataggaco aaaatagott atcaacgtga gaaaggactt 22140 cagagettgt ctactgecaa ccctcatttt/acccaatgag gaaagtgaag ctattagggg 22200 gcgagggaca cgtggaaggt cacacagca acaggaggtg attcacatgt agatttcagc 22260 acctgctcct gccacgctgg actggttcac ctcctaggct gaccctgcct ctcccctgtt 22320 cacacacat ctcgcacaca cacacaçáca cacacacaca cacaggtgct ttgttctggc 22380 caggggttcc tagggtcacc tettggttgc agecactgtg accecaactg gtetaacete 22440 tctcttcccc tcccacttcc ttcct/gtggt tcctgcagga gatgttcggg agcatgtttc 22500 acgcagagac cctgaccgcc ctg#gagggc tcagccagtc ctcatgctgc ctacagagtg 22560 cctggcactt gggacttcca tagaggatga gcctggggtc acagggggtg tcgggcggag 22620 gaaagtgcat cccccagage t#gggttcct ctctcctctc cccctctctc ctcccttcct 22680 tccctccccg catctccaga pagagcctct cagcagcagg ggggtgctac ccttacagga 22740 gtgagagtet ggtgageeca/etetteacee gteaggeeet ggeegeaatg gacaageete 22800 etgeteacte caccecace acctetgece tgteettgge agetgaagga cacettgaet 22860 tccagctttt acgagtgagc caaaaacaga aggacaagta caactgtgct ggcctgctgt 22920 acaagcttca aaaagtg/ccc cagagcccac acggctcggt gtcagatggt gtcaggctgt 22980 cacggacata gggataáact tggttaggac tetggettge ettececage tgeetcaact 23040 ctgtctctgg cagct/ctgca cccagggacc atgtgctctc cacacccagg agtctaggcc 23100 ttggtaacta tgcgccccc gtccatcatc cccaaggctg cccaaaccac cactgctgtc 23160 agcaagcaca tcagactcta gcctggacag tggccaggac cgtcgagacc accagagcta 23220 cctccccggg ga/cagcccac taaggttctg cctcagcctc ctgaaacatc actgccctca 23280 gaggetgete octteecetg gaggetgget agaaaceeea aagaggggga tgggtagetg 23340 gcagaatcat Étggcatcct agtaatagat accagttatt ctgcacaaaa cttttgggaa 23400 ttcctctttg/cacccagaga ctcagagggg aagagggtgc tagtaccaac acagggaaaa 23460 cggatgggac ctgggcccag acagtccccc ttgaccccag ggcccatcag ggaaatgcct 23520 ccctttggfa aatctgcctt atccttcttt acctggcaaa gagccaatca tgttaactct 23580 tccttat,cag cctgtggccc agagacacaa tggggtcctt ctgtaggcaa aggtggaagt 23640

```
cctccaggga tccgctacat cccctaactg catgcagatg tggaaagggg ctgatccaga 23/100
ttgggtcttc ctgcacagga agactcttta acacccttag gacctcaggc catcttctcc 2/3760
tatgaagatg aaaatagggg ttaagttttc catatgtaca aggaggtatt gagaggaacc/23820
ctactgttga cttgaaaata aataggttcc atgtgtaagt gttttgtaaa atttcagtgg 23880
aaatgcacag aaaatcttct ggcctctcat cactgctttt ctcaagcttc ttcagct, taa 23940
caaccccttc cctaacaggt tgggctggcc cagcctagga aaacatcccc atttct/aact 24000
tcagccagac ctgcgttgtg tgtctgtgtg ttgagtgagc tggtcagcta acaagtcttc 24060
ttagagttaa aggaggggt gctggccaag agccaacaca ttcttggccc aggagcattg 24120
cttttctgtg aattcattat gccatctggc tgccaatgga actcaaaact tggaaggcga 24180
aggacaatgt tatctgggat tcaccgtgca cagcacccga agtgccaaat %ccaggagga 24240
caaqaqcctt aqccaatgac aactcactct cccctactcc acctccttcc/aagtccagct 24300
caggcccagg aggtgggaga aggtcacaga gcctcaggaa tttccaagt/c agagtcccct 24360
ttgaaccaag tatctagatc ccctgaggac ttgatgaagt gatccttaac ccccaagtaa 24420
tcattaaccc ccagaccagc ctcagaactg aaggagattg ttgacccagt gacctggagt 24480
tgaggeteag ggagagatet gecacatgte tgagggttge agagge
```

<210> 4 <211> 714 <212> PRT

<213> Human

<400> 4 Leu Asn Gln Glu His Leu Glu Glu Leu Gly Arg frp Gly Ser Ala Pro Arg Thr His Gln Trp Arg Thr Trp Leu Gln Cys Ser Arg Ala Arg Ala 25 Tyr Ala Leu Leu Gln His Leu Pr∕o Va∕ Leu Val Trp Leu Pro Arg 40 45 Tyr Pro Val Arg Asp Trp Leu Leu/Glý Asp Leu Leu Ser Gly Leu Ser Val Ala Ile Met Gln Leu Pro GÍn Gly Leu Ala Tyr Ala Leu Leu Ala 75 Gly Leu Pro Pro Val Phe Gly Leu Tyr Ser Ser Phe Tyr Pro Val Phe Ile Tyr Phe Leu Phe Gly Thr Ser Arg His Ile Ser Val Gly Thr Phe 100 105 110 Ala Val Met Ser Val Met Val Gly Ser Val Thr Glu Ser Leu Ala Pro 120 Gln Ala Leu Asn Asp \$er Met Ile Asn Glu Thr Ala Arg Asp Ala Ala 135 140 Arg Val Gln Val Alá Ser Thr Leu Ser Val Leu Val Gly Leu Phe Gln 150 155 Val Gly Leu Gly Leu Ile His Phe Gly Phe Val Val Thr Tyr Leu Ser 170 Glu Pro Leu Va/1 Arg Gly Tyr Thr Thr Ala Ala Ala Val Gln Val Phe 185 Val Ser Gln Leu Lys Tyr Val Phe Gly Leu His Leu Ser Ser His Ser 195 Gly Pro Leú Ser Leu Ile Tyr Thr Val Leu Glu Val Cys Trp Lys Leu 215 220 Pro Gln Ser Lys Val Gly Thr Val Val Thr Ala Ala Val Ala Gly Val 230 235 Val Lexi Val Val Lys Leu Leu Asn Asp Lys Leu Gln Gln Leu 250

Pro Met Pro Ile Pro Gly Glu Leu Leu Thr Leu Ile Gly Ala Thr Gly 265

Il¢ Ser Tyr Gly Met Gly Leu Lys His Arg Phe Glu Val Asp Val Val

260



280 285 275 Gly Asn Ile Pro Ala Gly Leu Val Pro Pro Val Ala Pro Asn Thr Gln 295 300 Leu Phe Ser Lys Leu Val Gly Ser Ala Phe Thr Ile Ala Val Val Gly 315 310 Phe Ala Ile Ala Ile Ser Leu Gly Lys Ile Phe Ala Leu Arg His Glý 330 325 Tyr Arg Val Asp Ser Asn Gln Glu Leu Val Ala Leu Gly Leu Ser Asn 345 Leu Ile Gly Gly Ile Phe Gln Cys Phe Pro Val Ser Cys Ser Met Ser 360 365 Arg Ser Leu Val Gln Glu Ser Thr Gly Gly Asn Ser Gln Val/Ala Gly 375 380 Ala Ile Ser Ser Leu Phe Ile Leu Leu Ile Ile Val Lys Leu Gly Glu 390 395 Leu Phe His Asp Leu Pro Lys Ala Val Leu Ala Ala I 1/2 Ile Ile Val 410 Asn Leu Lys Gly Met Leu Arg Gln Leu Ser Asp Met/Arg Ser Leu Trp 420 425 Lys Ala Asn Arg Ala Asp Leu Leu Ile Trp Leu Yal Thr Phe Thr Ala 440 445 Thr Ile Leu Leu Asn Leu Asp Leu Gly Leu Va/ Val Ala Val Ile Phe 460 455 Ser Leu Leu Val Val Val Arg Thr Gln Met Pro His Tyr Ser Val 470 Leu Gly Gln Val Pro Asp Thr Asp Ile Tyx Arg Asp Val Ala Glu Tyr 485 90 Ser Glu Ala Lys Glu Val Arg Gly Val Lys Val Phe Arg Ser Ser Ala Thr Val Tyr Phe Ala Asn Ala Glu Phe Tyr Ser Asp Ala Leu Lys Gln 520 Arg Cys Gly Val Asp Val Asp Ph¢ Leu Ile Ser Gln Lys Lys Lys Leu 535 Leu Lys Lys Gln Glu Gln Leu Lys Leu Lys Gln Leu Gln Lys Glu Glu 550 555 Lys Leu Arg Lys Gln Ala Ala Ser Pro Lys Gly Ala Ser Val Ser Ile 565 570 Asn Val Asn Thr Ser Leu/Glu Asp Met Arg Ser Asn Asn Val Glu Asp 585 Cys Lys Met Met Gln Val Ser Ser Gly Asp Lys Met Glu Asp Ala Thr 600 Ala Asn Gly Gln Gly Asp Ser Lys Ala Pro Asp Gly Ser Thr Leu Lys 620 Ala Leu Gly Leu Pro Gln Pro Asp Phe His Ser Leu Ile Leu Asp Leu 630 635 Gly Ala Leu Ser Phe Val Asp Thr Val Cys Leu Lys Ser Leu Lys Asn 645 650 Ile Phe His Asp Phe Arg Glu Ile Glu Val Glu Val Tyr Met Ala Ala 665 Cys His Ser Pro Val Val Ser Gln Leu Glu Ala Gly His Phe Phe Asp 680 Ala Ser/Ile Thr Lys Lys His Leu Phe Ala Ser Val His Asp Ala Val 695 Thr Phe Ala Leu Gln His Pro Arg Pro Val 710